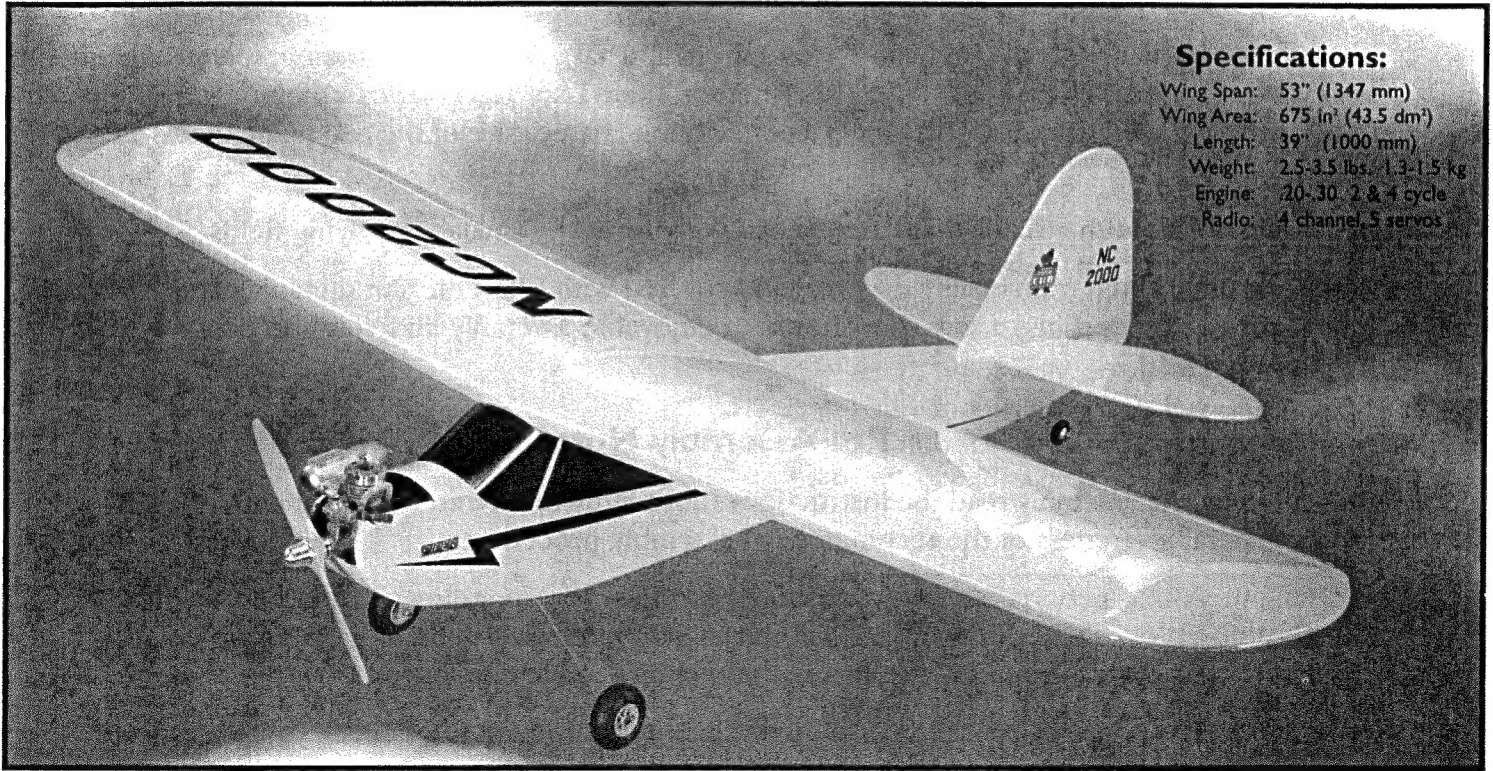


Lazy Tiger Cub

Assembly Manual



Specifications:

Wing Span: 53" (1347 mm)
Wing Area: 675 in² (43.5 dm²)
Length: 39" (1000 mm)
Weight: 2.5-3.5 lbs. 1.3-1.5 kg
Engine: 20, 30, 2 & 4 cycle
Radio: 4 channel, 5 servos

Lazy Tiger Cub ARF Airplane (TTR4530)

Distributed in North America by Ace Hobby Distributors, Inc. • 116 W 19th ST, Higginsville, MO 64037
Phone: 660-584-7121 • www.acehobby.com • E-mail: service@acehobby.com

Warranty

This kit is guaranteed to be free from defects in material and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost of the kit. By the act of building this user-assembled kit, the user accepts all resulting liability for damage caused by the final product. If the buyer is not prepared to accept this liability, it can be returned new and unused to the place of purchase for a refund.

Notice: Adult Supervision Required

This is not a toy. Assembly and flying of this product requires adult supervision.

Read through this book completely and become familiar with the assembly and flight of this airplane. Inspect all parts for completeness and damage. If you encounter any problems, call 660-584-6724 for help.



INTRODUCTION

In recent years, outdoor Lazy Flying has gained popularity amongst R/C flyers. Lazy Flying has the advantages of economy and relaxation, yet can provide the thrills of tight aerobatics done low and slow. You can develop flight routines including touch and go landings that are fun and almost comical, lending a flavor of "those magnificent men and their flying machines."

A low aspect ratio wing with a high lift airfoil (short and fat), a short tail moment, and light weight combine to produce these characteristics. The Thunder Tiger Lazy Tiger series combine these elements together with a scale-like appearance resulting in a comic book caricature of the real plane that is, in a word, "cute".

All of this fun is had with a small, quiet, fuel-sipping engine at the smallest of flying fields.

The plane is skillfully built from quality materials and covered with UltraCote® for durability and repairability. You are about ready to spend just a few short hours of enjoyable assembly and you will be ready to have a ball with your Lazy Tiger!

Pre-Assembly Notes

Before beginning the assembly read the instructions thoroughly to give an understanding of the sequence of steps and a general awareness of the recommended assembly procedures.

By following these instructions carefully and referring to the corresponding pictures, the assembly of your model will be both enjoyable and rewarding. The result will be a well built, easy to assemble ARF model, which you will be proud to display and also provide you considerable enjoyment.

If you are not an experienced R/C pilot, plan to have a fully competent pilot check your completed model and help you with your first flights. Even though we have tried to provide you with a very thorough instruction manual, R/C models are rather complicated and an experienced modeler can quickly check over your model to help make sure your first flights are successful.

Before you begin, check the entire contents of your kit against the parts list and photos to make sure that no parts are missing or damaged. This will also help you to become familiar with each component of your plane. If you find that any of the parts are either missing or damaged, please contact Ace Hobby Distributors, Inc., Customer Service (660-584-6704) immediately for replacements.

Trial fit each part before gluing it in place. Make sure you are using the correct part and that it fits well before assembling. No amount of glue can make up for a poor-fitting part.

Lazy Tiger Cub

TTR 4530



Adhesives:

Instant setting Cyanoacrylate adhesive (thin CA)
 Slow setting Cyanoacrylate adhesive (thick CA)
 10 Minute Epoxy (fast)
 20-30 Minute Epoxy (slow)
 Zap-a-dap-a-goo, Shoe-goo or equivalent

Tools:

Model knife, T-Pins
 Small screwdrivers, Medium screwdrivers
 Scissors
 Steel straight edge
 Long nose pliers and diagonal cutting pliers
 Drill and drill bits
 Fine felt tip pen and soft lead pencil
 Z-Bend pliers (optional)
 Rubbing Alcohol
 Masking Tape

R/C System:

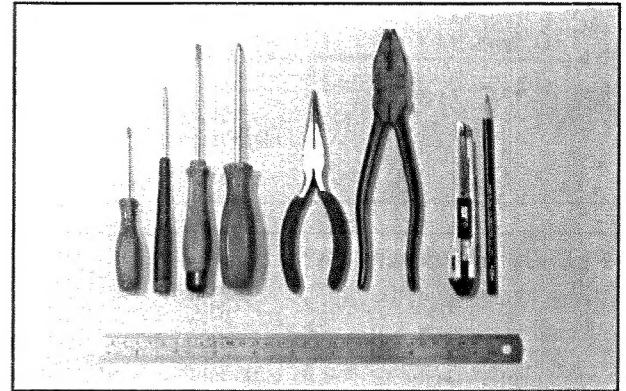
4 Channel radio with 5 servos (the two aileron servos can be standard or mini)

Engine:

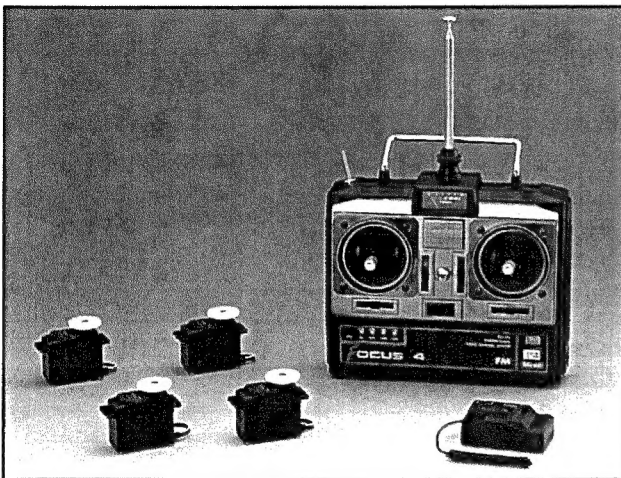
2 cycle: .15 to .25 CID
 4 cycle: .20 to .30 CID
 Propeller (appropriate for engine type and preferred performance)



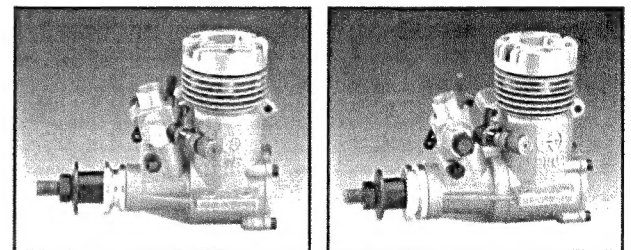
Adhesives - You will need two types of adhesives for the Slow Tiger - Epoxy and Instant (cyanoacrylate) adhesives. We recommend that you purchase both 5-minute and 30-minute epoxy to cut down on assembly time, but you can get by with only 30-minute epoxy if time is not important. You will also need a small bottle of both "Thick" and "Thin" instant adhesive. Zap-a-dap-a-goo, Shoe-Goo, or equivalent will also be needed.



Tools - Model assembly can be much easier if the proper tools are used. Therefore, we have included in our checklist to the left, a complete listing of all the tools we used to assemble our prototype models. As you will notice, many household tools can be utilized during construction.

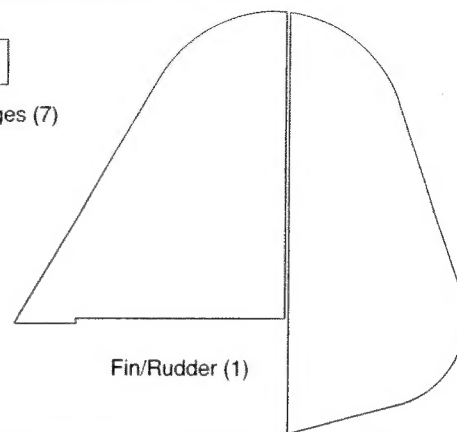
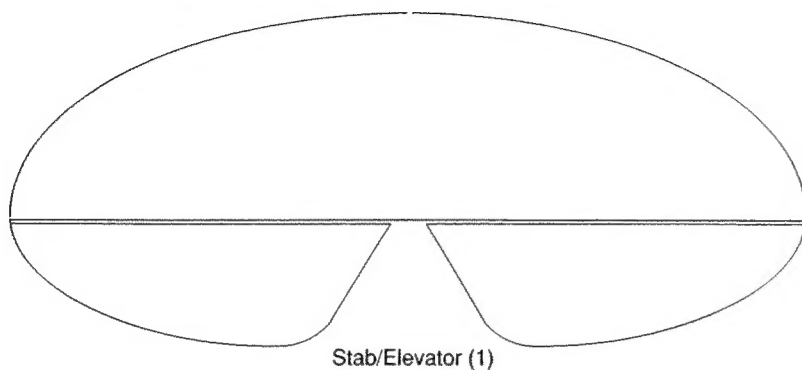


Radio - A 4-channel radio with five standard servos is required.

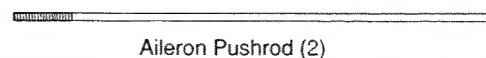
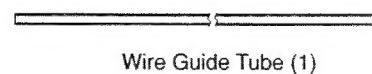
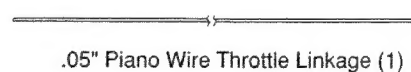
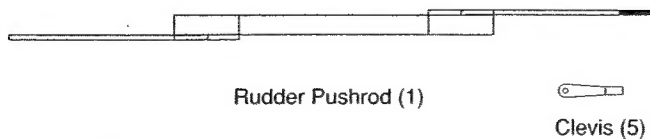
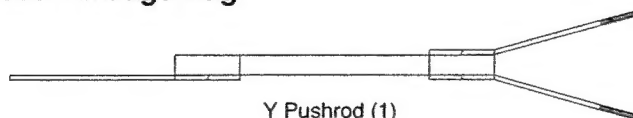


Engine - The Thunder Tiger GP-15/25 or the PRO-25 are the ideal engines for this airplane. These quiet-running engines are easy to start, require no special break-in periods, are very easy to maintain and will last for years.

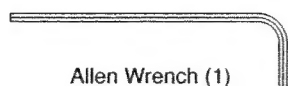
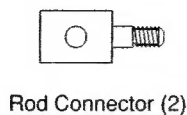
AS6089 Tail Feathers



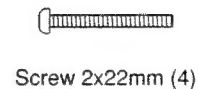
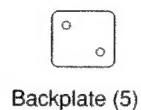
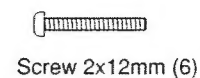
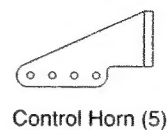
AS6090 Linkage Bag



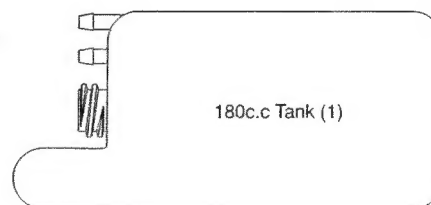
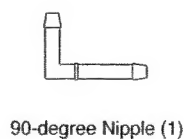
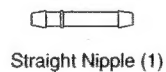
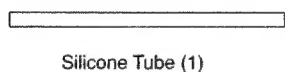
PE0009 Hardware Set



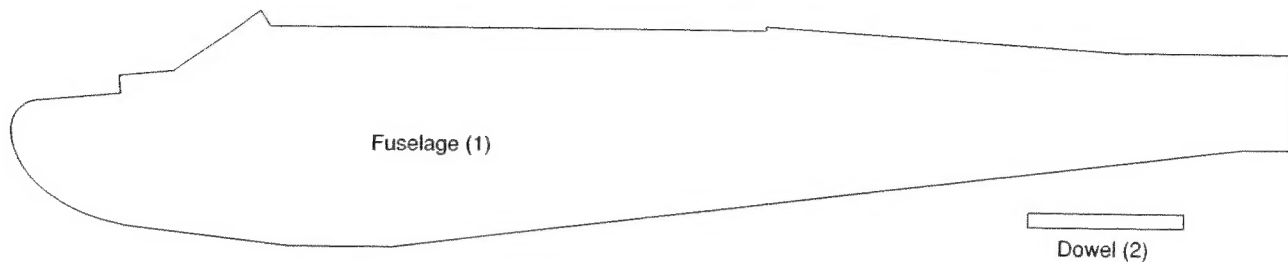
AS6093 Control Horn Set



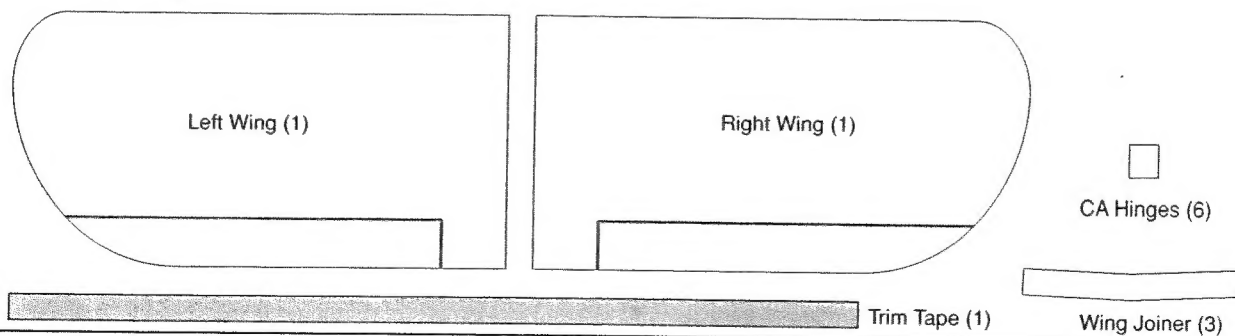
3261 Fuel Tank Set



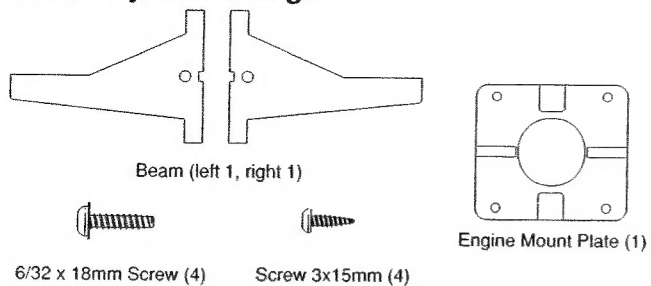
AS6087 Fuselage Set



AS6088 Main Wing Set



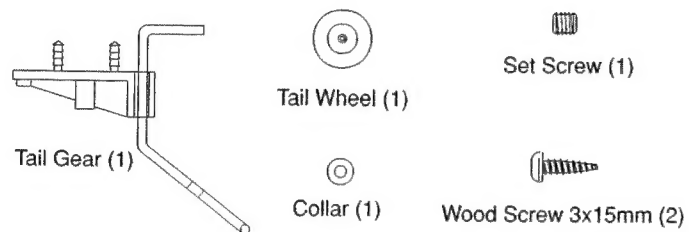
3102 Adjustable Engine Mount



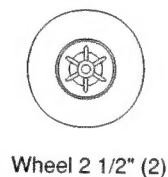
AS6091 Landing Gear Set



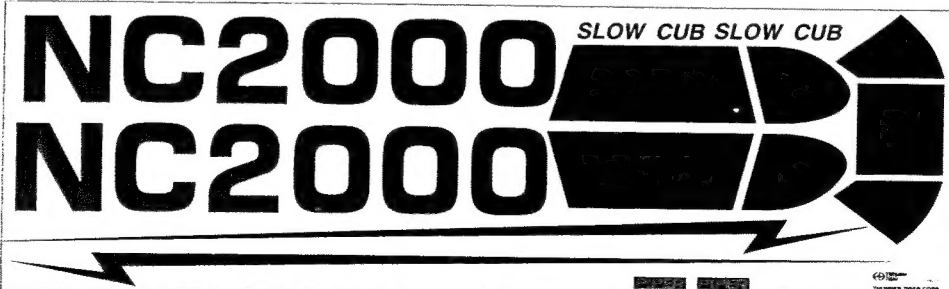
AS6007 Tail Wheel Set



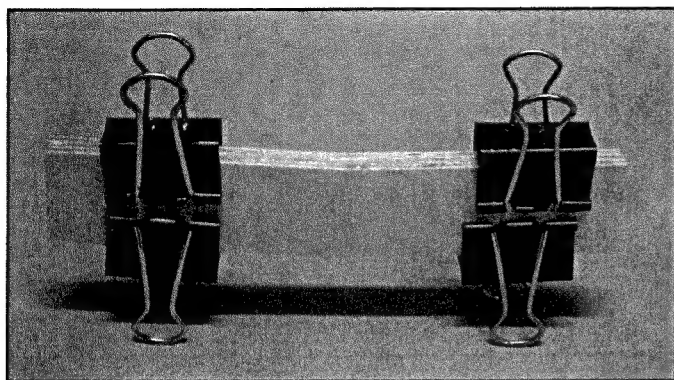
3256 Wheels



AS6092 Decal



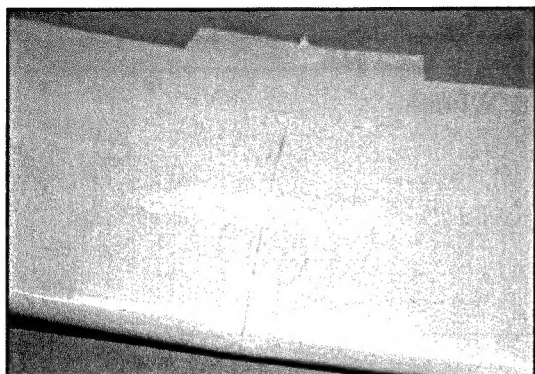
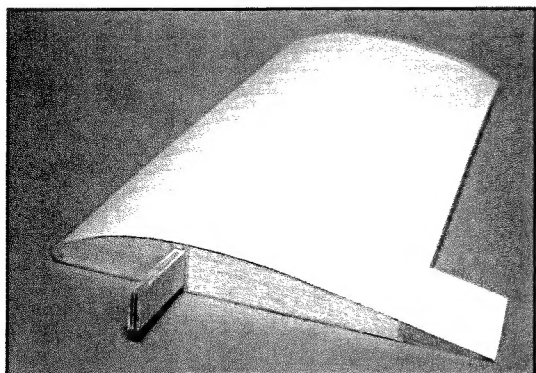
WING ASSEMBLY



Wing Assembly

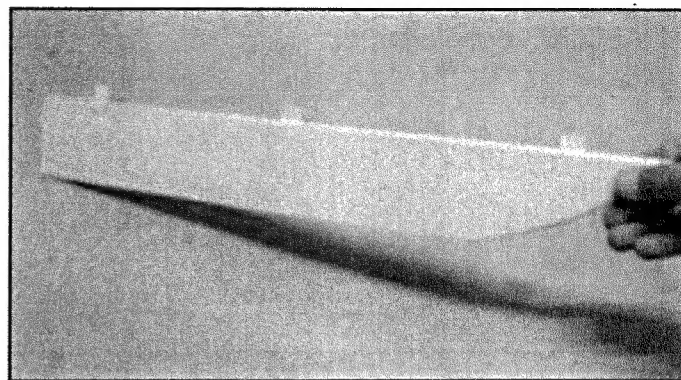
Laminate the three plywood dihedral braces together using epoxy and some clamps to hold them together while the glue sets. Use a paper towel and alcohol to remove any excess glue before it sets.

When set, check the fit in the slots of both wing halves and sand as needed.



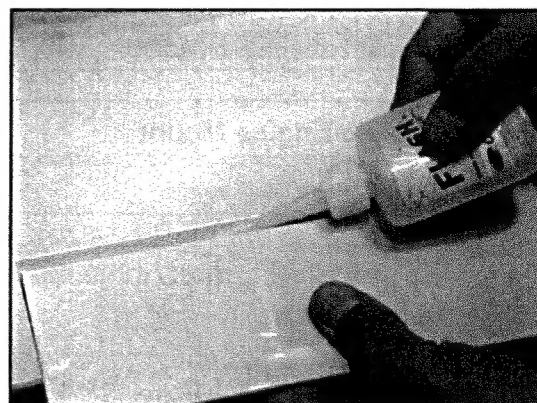
Using epoxy, join the wing halves together by buttering epoxy on both sides of one half of the dihedral brace and insert it in one wing half's slot. Make sure epoxy coats the entire surface. Smear epoxy on the center of both ribs and the other half of the dihedral brace and slide the wing together, making sure it joins completely together and glue coats all the joining surfaces.

Wipe off the excess with a paper towel and alcohol, then hold the wing together with some masking tape while the glue sets.



Hinge the ailerons to the wing by securing the "CA" hinges in place. (Have a paper towel ready in case you have to mop up excess glue.)

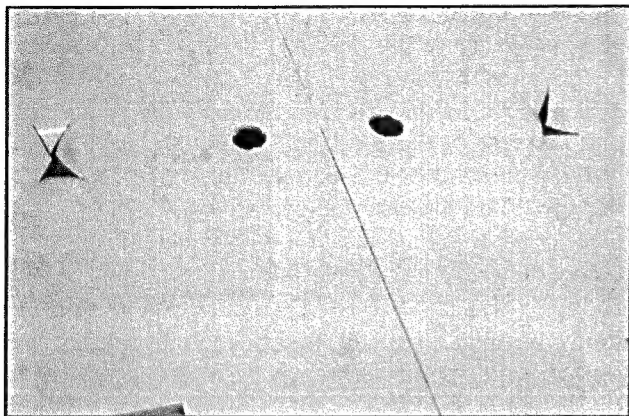
Begin by installing the furnished CA hinges centered in their slots in the ailerons. Put a couple drops of Thin CA on both sides of the hinge where it goes into the aileron. Let the glue "fire."



NOTE: there is a right and left aileron. Make sure you are installing them properly. The bottom of the aileron is identified by the control horn mounting platform that is in the first bay from the center of the aileron. You can see or feel the plate through the covering material.

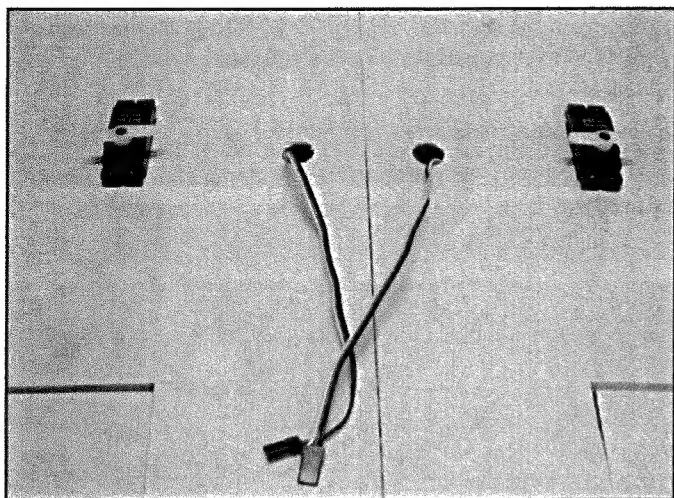
Making sure the right aileron is on the right wing and the left aileron is on the left wing, slip the hinges into the corresponding slots in the trailing edge of the wing.

With the wing resting on the leading edge, keeping the trailing edges lined up plus keeping the gap between the wing/ailerons at a minimum, put a couple drops of thin CA where the hinges enter the wing on both the top and bottom. It should wick down in the wing. When done, you should have applied thin CA to all surfaces of each hinge. After the glue has "fired," make sure the ailerons are free to move by flexing back and forth. Also make sure the glue joint is secure by tugging on the ailerons.

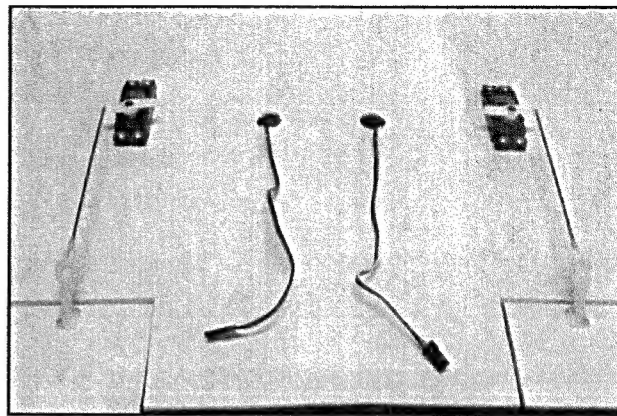


The two aileron servos are mounted next. They are mounted underneath the wing. Look on the bottom of the wing and note that there are two sizes of cutouts available for either standard or mini servos. Cut away the covering film from the cutout that fits the servos you are using.

Also trim away the covering material from the hole that is on the top side of the wing, close to the middle. This hole is for the aileron servo cable to pass through to the radio compartment in the fuselage.



Mount the aileron servos in place, using the hardware furnished with your radio. Drill 1/16" pilot holes for the screws. Before installing the servo, thread the connector end of the servo cable through the hole in the inboard rib and the bottom of the wing.

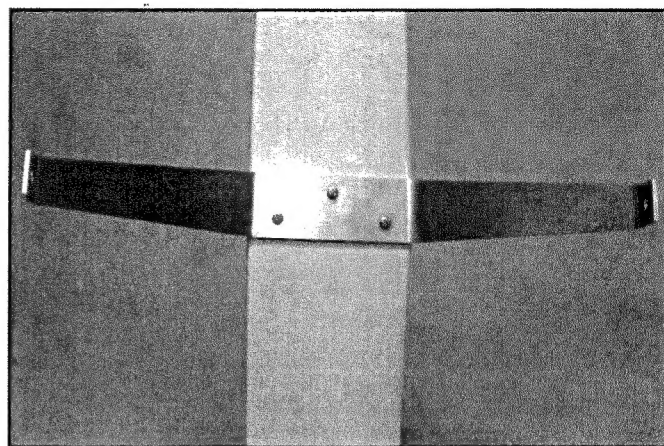


The servos are linked to the ailerons with threaded rods, clevises, and control horns. For proper operation, the rods need to go to either the innermost or the outermost side of the servo arms. That way, when both servos rotate in the same direction, one aileron will move upward while the other aileron moves downward.

Begin by mounting the control horn on the plywood plate in the aileron using the self tapping screws furnished. Drill a 1/16" pilot hole first.

Thread a nylon clevis on the threaded end of one of the furnished threaded rods. Snap in on the control horn and mark the length to the servo arm. Using Z-bend Pliers or needle nosed pliers, bend a "Z" bend in the rod and hook it up to the servo. Adjust for neutral with the servo centered.

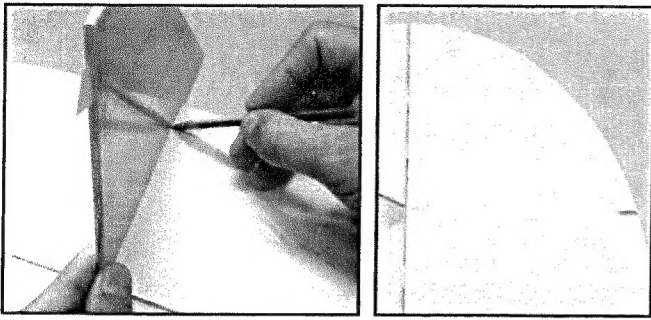
Landing Gear



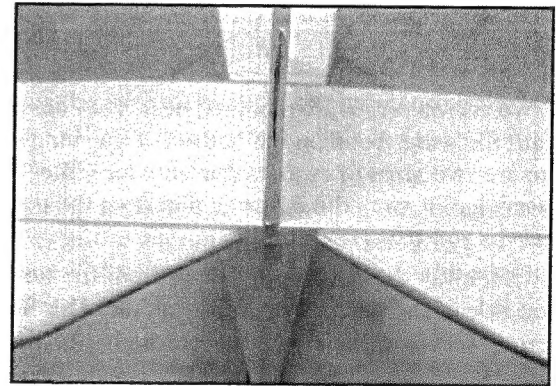
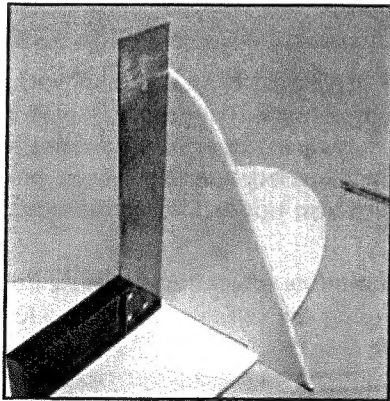
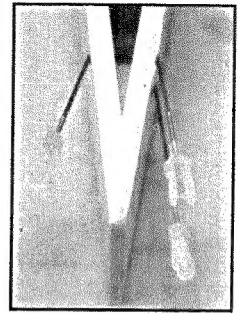
Install and secure the landing gear to the plywood plate in the bottom of the fuselage, referring to the photo. It is secured in place with 4mm wood screws. Drill 3/32" pilot holes for the screws.

Using a 4 x 32mm bolt and two nuts as an axle, attach the wheels to the landing gear.

TAIL ASSEMBLY



Before you glue the stab on the fuse, the pushrods have to be installed. Bend both pushrods as shown. Install the elevator pushrod so the ends exit the top slots in the rear of the fuselage. Install the rudder pushrod in the bottom slot. Screw clevises on the ends to keep them from accidentally falling out. You will do a bit more bending on the pushrods later.



Tail Assembly

Position the fin on the stab, making sure it is centered on the stab. Line up the trailing edges of both parts. Use a soft pencil to mark the location of the fin on the stab. (Note: there is a slot in the stab to receive the tab on the front of the fin.)

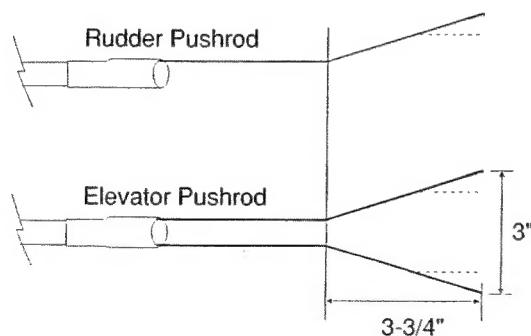
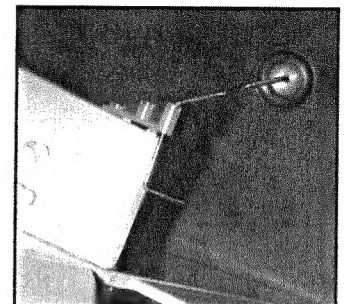
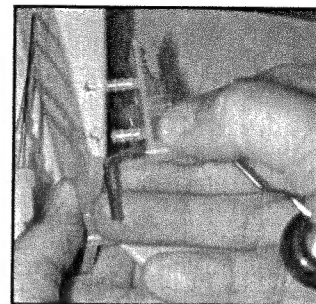
Next, cut away the covering material so you can glue the fin to the stab. To do so, very carefully use a sharp razor blade or xacto knife to cut ONLY the film. Do not cut into the balsa or you will weaken the stab. Cut about 1/16" on the INSIDE of your marks.

Securely epoxy the fin to the stab, using a triangle to keep it perpendicular as the glue sets.

Epoxy the stab/fin assembly to the fuselage as follows: Position the stab/fin on the fuselage so it is centered. Mark where the fuselage sides meet the bottom of the stab.

Carefully cut away the covering film on the bottom of the stab, 1/16" on the inside of the marks.

Securely epoxy the stab to the fuselage, making sure it stays centered and level.

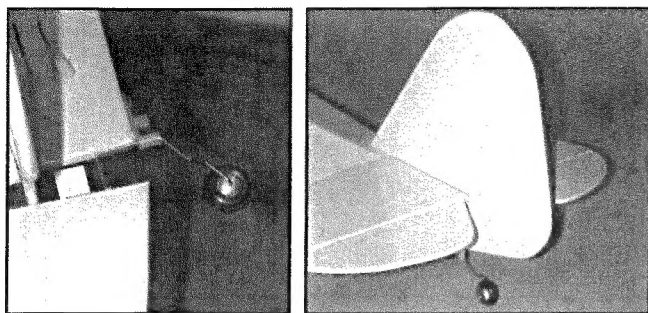


Locate the tail wheel assembly and position it on the bottom rear of the fuselage. Mark the location of the two barbed posts and drill 1/8" holes in the bottom of the fuse to accommodate the posts.

Secure the tail wheel assembly to the fuselage with the self tapping screws furnished. (There is a short screw and a long screw.) Drill 1/16" pilot holes.

The tail wheel is held in place with a small wheel collar and set screw.

FUSELAGE ASSEMBLY



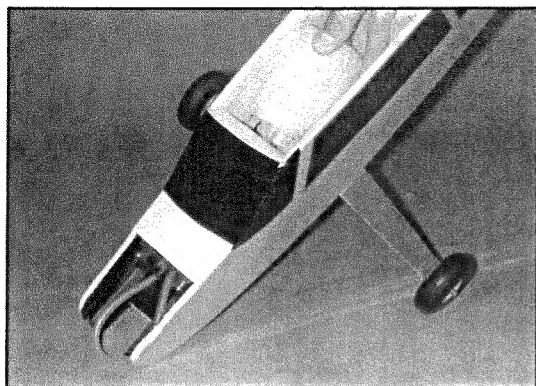
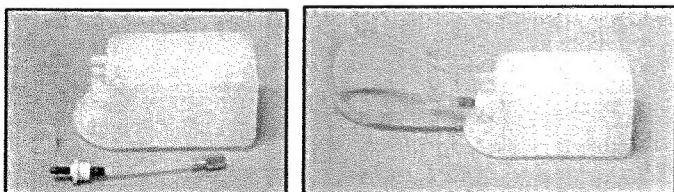
Position the rudder and note that there needs to be a hole drilled in the rudder to accommodate the tiller arm of the tailwheel assembly.

Mark for this hole and drill using a 1/16" bit.

Reposition the rudder. Note that a bit of trimming is necessary on the leading edge of the rudder to accommodate the tail wheel wire. Trim as needed.

Using the same technique as you did for the ailerons, hinge the rudder to the fin and fuselage using three of the CA hinges furnished.

Using the same technique as you did for the ailerons, hinge the elevators to the stabilizer using CA hinges.



Fuselage Assembly

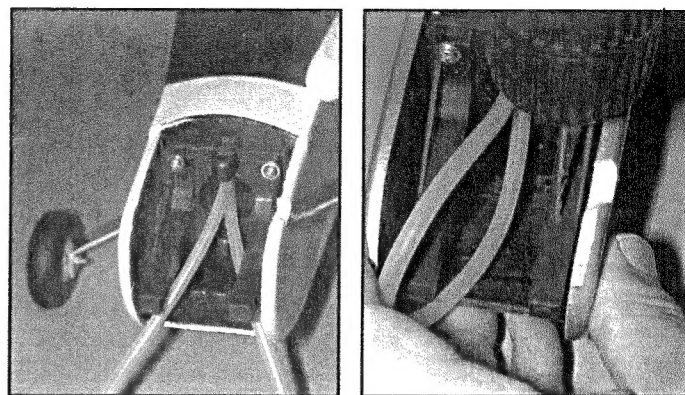
Assemble the fuel tank as shown.

Obtain a piece of medium size fuel tubing 12" long and push one end onto the fuel outlet nipple. Loop it back and put in on the top vent nipple.

Now put a hook on one end of a 12" piece of music wire. Use a coat hanger if you don't have music wire.

Thread the hook end of the wire through the oblong hole in the firewall and hook it onto the loop of fuel line that is already on the tank.

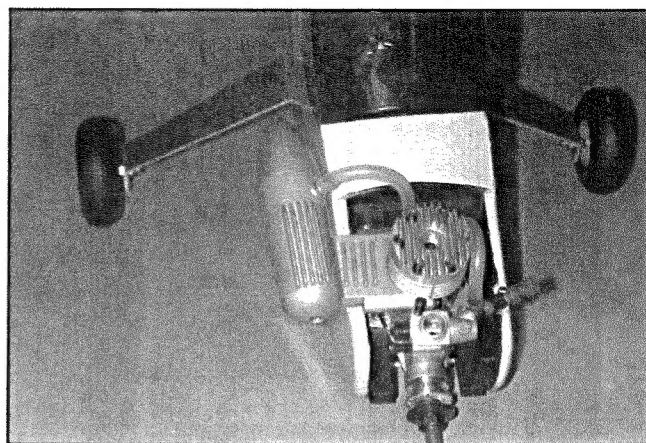
Pull the wire back through the firewall, pulling the fuel line with it. As you pull, move the fuel tank into position so it is rightside-up.



Secure the engine mount assembly on the firewall using the four screws furnished. Hint: run the screws in and out of the blind nuts a couple times to clear the threads before you secure the mount.

Position your engine on the engine mount (note that the mount's beam width is adjustable to accommodate your engine). Mark, then drill pilot holes using a 3/32" bit.

The throttle linkage is simply a piece of music wire with a "Z" bend on the throttle arm end. Make this "Z" bend and hook the wire to the throttle arm. Now thread the music wire through the hole in the firewall as you move the engine into position. You will have to do some bending on the music wire so you clear the muffler and get proper throttle action. *NOTE: if your throttle arm is on the left side of your engine, you'll have to drill a new hole for the music wire.*



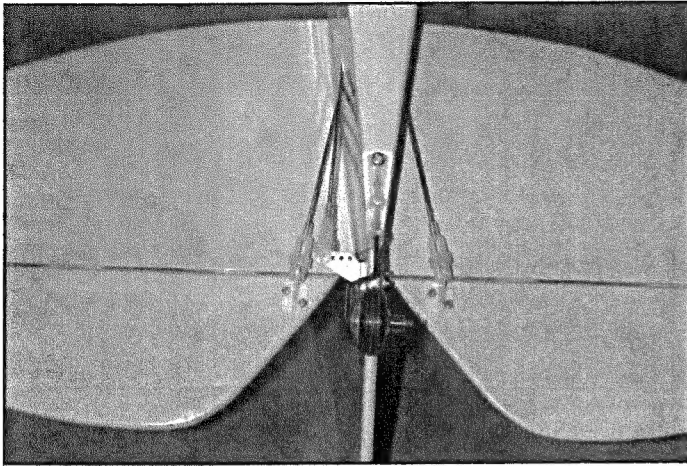
Mount your engine using the four M3 X 15mm screws.

Secure the muffler in place, then cut the fuel tubing to length and install on the engine. Make sure the fuel line from the tank (on the bottom) goes to the carburetor and the vent line (on the top) goes to the muffler's pressure tap.

NOTE: If you had to do some trimming to the fuselage sides to clear the needle valve and/or the muffler, fuel proof any exposed wood with thin CA.

Holes are drilled for the wing hold-down dowels. Locate the holes and cut away the covering material. Slip the dowels into place; a drop of CA will keep them in place.

RADIO INSTALLATION



Radio Installation

First, mount the elevator control horns. Begin by bending the pushrods so they resume a parallel path relative to the centerline of the fuselage. With a clevis screwed on, determine the proper location for each control horn (the holes in the control horn should align with the hinge line) and mount them to the elevators with the machine screws and backer plate furnished. Drill $3/32$ " holes for the screws.

Repeat for the rudder control horn.

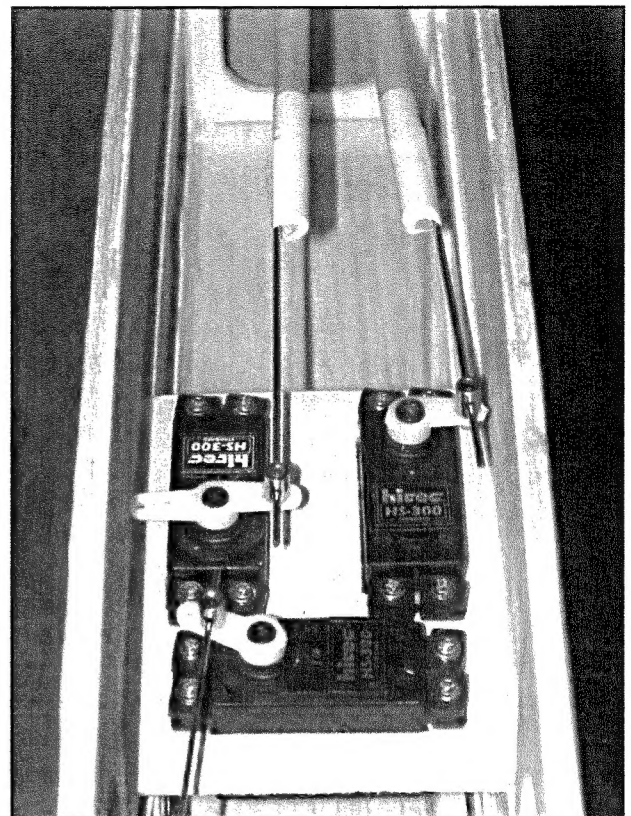
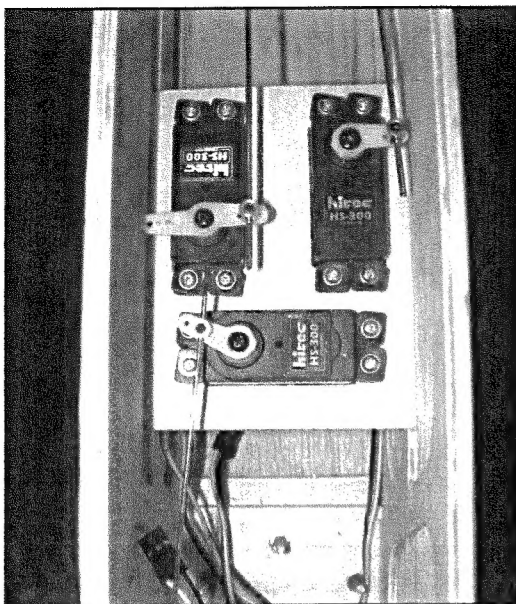
Install the servos next. A servo tray is already installed in the fuselage, so you simply mount them in the cutouts by drilling $1/16$ " pilot holes and using the screws that were supplied with your radio.

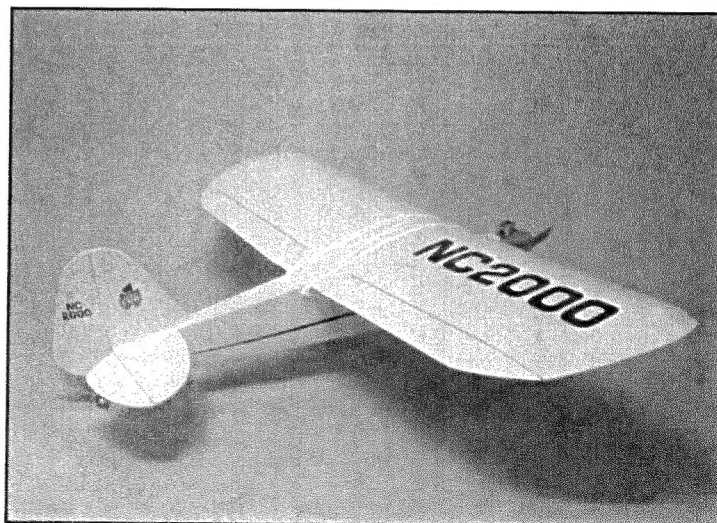
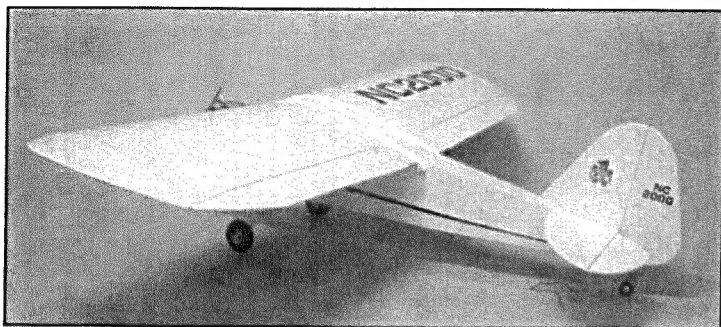
The rudder and elevator pushrods connect to the servo arm with a "Z" bend. With the control surface in neutral, mark the proper spot on the wire and use a Z-Bend Pliers or needle-nose pliers to make the bend. Cut off the excess.

The throttle music wire linkage is connected to the servo arm with an "EZ" connector which is secured to the servo arm with a small nut. When you have the throttle movement as desired, lock the wire down with the furnished set screw.

You will need to obtain a "Y" connector so your two aileron servos will plug into the receiver.

The receiver and battery pack should be foam mounted in the compartment ahead of the servos. You may find it necessary to move the battery pack into the forward compartment of the fuselage to achieve proper balance.





Final Touches

Apply the decals as shown in the photos. To prevent bubbles on the larger decals, you may want to first spray on some soapy water or window cleaner; apply the decal and squeegee out the water using the edge of a credit card.

Center of Gravity

Your Lazy Tiger Cub should balance 3-1/2" to 3-3/4" back from the leading edge of the wing (about 3/8" in front of the main spar.)

With the airplane suspended at this point with your fingertips, the plane should balance level.

If nose weight is needed, move your battery into the forward compartment. Move it as far forward as needed for proper balance. Only use additional weight if absolutely necessary.

Control Throws

Make sure all your control surfaces are going in the proper direction relative to the transmitter commands. Set the control surface throws as follows for the initial flights. These may be adjusted later for personal preference.

Elevator: 5/8" up & 5/8" down, Low Rate
1" up & 1" down, High Rate

Ailerons: 5/8" up & 3/8" down, Low Rate
1" up & 3/8" down, High Rate

Rudder: 3/4" left & 3/4" right, Low Rate
1-3/8" left & 1-3/8" right, High Rate

(measured at rear edge of control surface)

Flying

Your Lazy Tiger is a real pleasure to fly. You will find that it takes off and lands at walking speed. Lazy Flying has the advantages of economy and relaxation, yet can provide the thrills of tight aerobatics done low and slow. You can develop flight routines including touch and go landings that are fun and almost comical, lending a flavor of "those magnificent men and their flying machines."

We hope you have enjoyed building your Lazy Tiger and have even more enjoyment flying it. Your input is welcome.



Pre-Flight Check List

- ☐ 1. Check all control surfaces for possible looseness or deterioration.
- ☐ 2. Check all screws, clevises, nuts and all other connectors to make sure they are securely fastened.
- ☐ 3. Check which radio frequencies are being used. Do not turn on your radio until absolutely sure you are the only one operating on that frequency.
- ☐ 4. Check for proper operation of all control surfaces.
- ☐ 5. Check the level of charge in both the transmitter and receiver batteries before flying.
- ☐ 6. Range check the radio both with and without the engine running! Follow the radio manufacturers instructions for this.

Post-Flight Check List

- ☐ 1. Be sure that both the transmitter and receiver switches are turned off.
- ☐ 2. Drain all excess fuel from the tank. Fuel left in the tank for extended periods can "gunk up" the tank, fittings and carburetor.
- ☐ 3. Clean the plane with paper towels and a light-duty spray cleanser. Keeping your plane clean will make it last longer and keep it looking nice.
- ☐ 4. Put a few drops of after-run or light oil in the carburetor and turn the prop over a few times (without the glow plug ignited) to distribute the oil throughout the engine.
- ☐ 5. Inspect the prop and replace it if any chips or cracks are found.
- ☐ 6. Inspect the entire plane for covering tears, new dings and dents, loose screws and connectors and any other wear and tear.

Safety Precautions

1. Wear safety glasses when starting and running all model engines.
2. Model engine fuel is very flammable and the flame is very dangerous because it is almost invisible! Do not smoke or allow sparks, high heat or other flames near the fuel.
3. Do not run model engines inside a garage or other closed room as they give off large amounts of deadly carbon monoxide gas.
4. Do not run model engines around gravel, sand or other loose debris. These materials will be ingested through the carburetor and can also be kicked up by the prop.
5. Always stay behind the propeller when the engine is running. Make all engine adjustments from behind the engine.
6. Do not allow loose clothing or other loose objects close to the prop.
7. To stop an engine, cut off the fuel or air supply to the engine. Do not throw rags or other objects into the prop to stop the engine.
8. Do not touch the engine or muffler during or right after it has been running—it gets very hot!

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